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Body Size Differences between males in the National Guard/ Reserve forces and Active Duty Soldiers

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The Science Behind the Warrior:

Yesterday, Today and

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Introduction

- **Anthropometry**
  - Measurement of the human body
- **Design and Fit**
  - Knowledge of body shape and size
- **User Population**
  - Commercial, first responders, **military**
- **Variation**
  - Age, sex, population composition, secular trends, fitness and body fat standards

Background

- **Concept of need**
  - Lack of fit
- **1988 Anthropometric Survey of US Army Personnel (ANSUR)**
  - Active Duty Soldiers
- **Demographic Shift in the Military**
  - Increased use of ARNG and AR
  - No measured data for ARNG and AR until recently
- **Null Hypothesis**
  - No difference in height, weight or Body Mass Index (BMI)

Materials and Methods

- **Variables**
  - Height (mm), weight (kg), BMI (kg/m^2)
- **ARNG from Soldiers at Fort Polk (2003)**
  - White male Army National Guard Soldiers (n = 351)[1]
- **1988 Anthropometric Database (2002)**
  - White Active Duty Soldiers (n =1613)[1]
  - Data adjusted for 15 years of secular trends
- **Statistics**
  - T-tests, Wilcoxon Rank-Sum

[1]This study tested only white males because the sample sizes for women and minorities from ARNG groups are currently too small to provide any valid statistical comparisons.

Results

Table1. Distribution of Anthropometric Variables between an ARNG and an active duty sample of Soldiers.

Age	Variable	Fort Polk[1] Mean (*sd*)	ANSUR [2] Mean (*sd*)
<25 (n = 109)[1] (n = 813)[2]	Height	1771.2 (61.0)	1770.2 (65.9)
	Weight	82.9 (12.5)	80.5 (9.8)
	***BMI**	**26.6 (3.5)**	**25.7 (2.6)**
25 – 34 (n = 116)[1] (n = 555)[2]	****Height**	**1757.5 (64.7)**	**1779.7 (64.4)**
	Weight	84.7 (12.3)	83.8 (10.9)
	***BMI**	**27.6 (3.7)**	**26.4 (2.8)**
35 – 44 (n = 97)[1] (n = 236)[2]	****Height**	**1747.5 (72.8)**	**1772.3 (64.8)**
	Weight	84.5 (11.6)	86.1 (11.8)
	****BMI**	**28.8 (3.4)**	**27.4 (3.0)**
45+ (n = 29) (n = 9)[2]	Height	1722.4 (79.4)	1781.1 (71.1)
	Weight	84.6 (10.3)	92.3 (14.5)
	BMI	28.6 (2.2)	28.9 (2.9)

[1] refers to the sample of ARNG soldiers measured at Fort Polk, Louisiana (2003); [2] refers to the sample of active duty Soldiers measured in the 1988 ANSUR database whose data is adjusted for fifteen years of secular trend change (2002).
*P<.05 after Bonferroni correction; **P<.01 after Bonferroni correction; ***P<.001 after Bonferroni Correction
Height differences were tested using t-tests; Weight and BMI differences were tested using Wilcoxon Rank-Sum tests.

Discussion

- **Bottom Line**
  - ARNG appear shorter and heavier than Active Duty Soldiers
- **Lack of Data**
  - Recent deployment of Active Duty and ARNG
  - Need more women, minorities and older individuals
- **Comparisons limited**
  - Active duty data is from 1988
  - Adjusted for 15 years of secular trends
- **However**
  - Data reported from AD soldiers at Fort Bragg indicate BMI values that are smaller than those found among the ARNG in this study from Fort Polk (Friedl et al., 2002).

Summary/Conclusions

- **Anthropometry**
  - Long history in the military
  - Anthropometry is critical to design and and fit clothing and equipment
  - First reliable data collected on ARNG personnel
- **Design and Fit**
  - Currently based on data from Active Duty Soldiers
  - Half of the current armed forces is comprised of National Guard and Reserve data
  - Army National Guard appear to be different
- **Continued research**
  - Civilian anthropometric data may not suffice for ARNG/AR
  - Additional ARNG/AR data are needed

Thank you

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